



# Jellyfish Tank

Written By: Alex Andon



## TOOLS:

- [Acrylic cement \(1\)](#)  
*Optional if making tank*
- [Diamond hole saw \(1\)](#)  
*Optional if you're using glass tank.*
- [Dremel with 1/8" drill bit and router \(1\)](#)
- [PVC pipe cutter \(1\)](#)
- [Ruler or straightedge \(1\)](#)  
*Optional if making tank*
- [Tape measure \(1\)](#)



## PARTS:

- [Polycarbonate sheet, 1/32" thick \(1\)](#)  
*width 1" less than the interior width of your tank, and length equal to the tank height plus the tank length*
- [Salt water pump \(1\)](#)  
*able to pump at least 5 times the volume of your tank per hour at 0 head pressure*
- [PVC glue \(1\)](#)
- [PVC caps, slip, 1/2" \(2\)](#)
- [PVC pipe, Schedule 40, 1/2" diameter, 2' length \(1\)](#)
- [PVC tee fitting, slip x slip x female pipe thread, 1/2" \(1\)](#)
- [PVC pipe, Schedule 40, 1 1/2" diameter, 2' length \(1\)](#)
- [PVC hose barb fittings, male pipe thread sized for 1/2" flexible hose \(2\)](#)
- [PVC ball valve, slip x slip, 1/2" \(1\)](#)
- [PVC fitting\(s\) to connect 1/2" hose barb to 1/2" valve to water pump \(1\)](#)

*This will depend on your pump. My pump had a male pipe thread (MPT) fitting, so I used two adapters: female pipe thread (FPT) at both ends, and MPT × slip. It would have been simpler to use just one slip × FPT adapter.*

- PVC adapter, male pipe thread × slip, 1½" (1)
- PVC elbow, slip × slip, 1½" (1)
- Plastic epoxy (1)
- Teflon tape (1)
- Threaded bulkhead fitting, 1½" (1)
- Flexible hose, ½" diameter, 3' length (1)
- Mesh screen, cut to (width of tank + 2") × (½ height of tank) (1)
- Plastic bio-balls, about 3gals (1)  
*or plastic pieces of any kind with a lot of surface area, such as green plastic army men*
- Twist ties or zip ties (2)
- Acrylic strips: ½" × 1" × outside width of tank; and ½" × 1" × inside width of tank (2)  
*for braces to hold the screen and polycarbonate sheet*
- Salt water (1)
- Submersible aquarium heater (1)  
*for up to 15gals; 100W for up to 25gals; 200W for up to 50gals. For cold-water species, replace the heater with a drop-in water chiller*
- Aquarium tank (1)  
*At least 4 gallons and approximately*

*cube-shaped. I built a 23"x28"x17" acrylic tank (see Tools)*

- [Acrylic sheets, ½" thick: 28"x23" \(bottom\); 28"x17" \(2, sides\); 22"x17" \(2, ends\); 22"x1" \(2, braces\); 23"x1" \(brace\) \(1\)](#)

*Optional if making tank, buy cut-to size from a local plastics distributor or cut yourself (carefully) using a table saw with carbide blade in a well-ventilated area.*

- [Polycarbonate sheet: Polycarbonate sheet: 21 7/8"x45"x1/32" \(1\)](#)

*Optional if making tank*

- [Dimensional lumber, 2x4, 8' lengths \(2\)](#)  
*Optional if making tank, to build a 90° jig.*

## SUMMARY

I was always terrified of jellyfish as a kid. The thought of a slimy translucent blob just below the water's surface that could deliver a painful sting kept me out of the ocean most of the summer. It wasn't until years later when I collected a small jellyfish at the beach and observed it in an aquarium that I realized how stunningly beautiful they are. As it pulsed steadily and allowed its tentacles to flutter behind it, I was completely hypnotized. Soon, I decided to design and build an aquarium that could keep jellyfish alive and well. Convert a regular aquarium into a jellyfish habitat.

Jellyfish can't live in a regular aquarium because they get sucked into the filtration pumps and liquefied. Using my extensive experience in building aquariums as part of my research projects at Duke and the University of Delaware, I developed a tank with a special water flow to keep jellies suspended in the middle of the tank. The jellyfish aquarium design described in this article has no dead spots for water flow, eliminates strong points of suction, and creates a laminar water flow pattern that sweeps the delicate jellyfish away from the edges of the tank.

**Step 1 — Build the tank (optional).**

- The acrylic sheets come with a protective wax paper covering. Peel back the paper 1" from each edge you plan to glue, and use a ruler or straightedge to tear the excess (peeled) paper off.
- Use a saw and drill to build a 90° jig from the 2×4s to hold the acrylic pieces in place while the glue sets.
- Use acrylic cement at the joints to weld the tank together (refer to instructions included with the cement, and see Step 3 for placement of braces). The cement enters the cracks through capillary action.
- Use aquarium-grade silicone caulking to seal all the glued joints to prevent water from leaking (normal silicone caulking isn't rated for salt water and will degrade quickly; it may also leach into the water and kill your jellyfish).
- After the joints are completely dry, peel the rest of the wax paper off the acrylic.

## Step 2 — Assemble the spray bar.

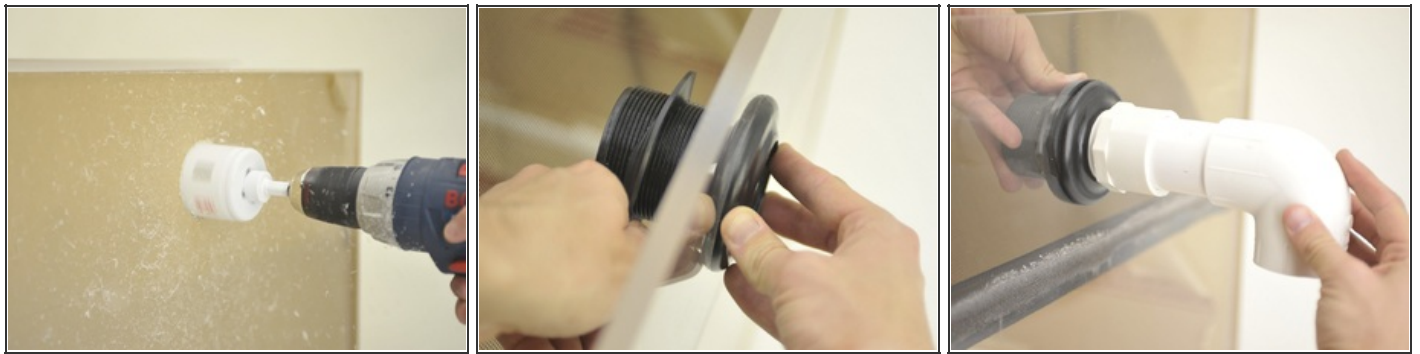


- Cut the ½" PVC pipe into 2 equal pieces — these will be assembled with the tee fitting and 2 slip caps to form the spray bar.
- Glue the 2 pieces of ½" PVC pipe on either side of the tee fitting. Glue the slip caps onto the ends using PVC glue.
- Using a Dremel or a drill press with a 1/8" bit, drill holes in the PVC pipe on the side opposite the tee fitting's opening. The holes should be approximately ½" apart, following a straight line from one end of the spray bar to the other.
- Screw a hose barb fitting into the tee using teflon tape.
- The PVC pieces should be cut so that the final length of the spray bar is a little narrower than the width of your tank. Before gluing, make sure the assembled spray bar fits inside the width of your tank.



**Step 3 — Make the exit screen.**

- Using plastic epoxy or acrylic cement, glue the long acrylic brace on top of the tank at a distance from the drain side of the tank equal to  $\frac{1}{3}$  of the tank height.
- Cut out the corners of the screen as shown. The longer, straight sides will be glued to cross-braces and the short, beveled sides will be glued to the inside of the tank.
- Epoxy one long side of the screen to one of the shorter acrylic braces. Add more epoxy on top, and sandwich the screen between the brace and the inside of the tank, on the drain side, about  $\frac{1}{3}$  of the way down from the top. Hold it in place and allow the epoxy to cure to a strong hold.
- Glue the opposite side of the screen under and around the long brace on top of the tank. Gently pull the screen taut and hold it in place while the epoxy cures. Fold the short sides of the screen in and epoxy them against the inside of the tank.

**Step 4 — Make the drain.**

- Cut out a circle slightly bigger than the bulkhead fitting in the middle of the tank's exit screen side, as far up as it can go without the fitting overlapping the top of the tank.
- Install the bulkhead fitting in the hole. Using teflon tape, screw the 1½" male pipe thread (MPT) × slip adapter into the outside of the bulkhead fitting.
- Cut a 3" long piece of 1½" PVC pipe and use it to connect the 1½" male pipe thread MPT × slip adapter to the 1½" PVC elbow, pointing down.
- Cut a piece of 1½" PVC pipe long enough to run from the 1½" PVC elbow into the bucket beside the tank.
- If you're using an acrylic tank you can make the hole with a hole saw or Dremel with a router fitting. If you're using a glass tank you need to make the hole with a diamond hole saw.



## Step 5 — Assemble the bucket.



- Using the necessary adapters, attach the ½" hose barb fitting to the ½" valve, and attach the valve to the pump.
- Attach the ½" flexible hose to the hose barb fitting. Put the pump and heater at the bottom of the bucket, and fill the bucket with bio-balls or whatever pieces of plastic you'll be using for the filter.

## Step 6 — Install the spray bar.



- Attach the free end of the ½" flexible hose to the hose barb fitting on the spray bar.
- Use 2 zip or twisty ties to tie the spray bar in place so the sheet of water will wash across the exit screen.



## Step 7 — Insert the flow sheet.



- Epoxy the remaining acrylic brace flat inside the end of the tank opposite the drain, flush with the top.
- Wedge the polycarbonate sheet into the tank so that it runs along the bottom and curves up at each end, held down by the two braces glued inside the tank. (If you built a tank 28"×23"×17" high, your polycarbonate sheet should measure 45"×21 7/8".)

**Step 8 — Just add jellyfish.**



- Fill the tank with salt water. You can get pre-mixed salt water or mix it yourself with aquarium salt, but make sure you use distilled or reverse-osmosis (RO) filtered water. Do not use unfiltered tap water.
- Plug in the pump and heater, and allow the water to heat to the natural temperature of the jellyfish you'll be adding (almost all commercially available jellies are kept at 77°F).
- Add jellyfish. Moon jellyfish do best in these aquariums. (If you can't collect jellyfish from the ocean, you can buy jellyfish and jellyfish food from my company: <http://www.jellyfishart.com>). Adjust the valve so there's just enough water flow to keep the jellyfish from settling on the bottom. Water has a lot of momentum, so wait at least 10 minutes after adjusting the valve to observe the effect on water flow.
- Adjust the position of the spray bar so water washes over the exit screen without creating any air bubbles, and the jellyfish don't get stuck to the screen. You can feed your jellyfish live brine shrimp or frozen plankton foods made specifically for jellyfish. Learn more about the care and feeding of jellyfish at <http://www.jellyfishart.com>.

- Change 25% of the water every 2 weeks once your tank is running. For maximum longevity with coastal jellyfish (from their natural lifespan of about 8 months up to a year or more), feed them twice a day and use a robust filtration system. Try lighting your jellies from the side or top of the tank. The light will bounce off their translucent bodies and make them glow. You can use color-changing LEDs to make the jellyfish light up with whatever colors you shine on them.



This document was last generated on 2012-10-31 09:49:30 PM.